

**WHAT IS CLAIMED IS:**

1. A fixation unit that fixes toner onto a recording paper, said fixation unit comprising:

5 a thermal fixation roller;  
a heating part that heats said thermal fixation roller;  
a compressing part that presses said thermal fixation roller; and  
a drive gear, mounted on said thermal fixation roller, which rotationally  
drives said thermal fixation roller, wherein an outer diameter of said thermal fixation  
10 roller is equal to or larger than an inner diameter of said drive gear, as said heating  
part heats said thermal fixation roller.

2. A fixation unit according to claim 1, wherein  $0 \leq A - B \leq 0.2$  mm is met  
where A is the outer diameter of the thermal fixation roller and B is the inner diameter  
15 of the drive gear.

3. A fixation unit according to claim 1, wherein said thermal fixation roller  
has a temperature between 150°C and 210°C as said heating part heats said thermal  
fixation roller.

20

4. A fixation unit according to claim 1, wherein the outer diameter of said  
thermal fixation roller is equal to or larger than the inner diameter of said drive gear at  
the room temperature.

5. A fixation unit according to claim 1, wherein one of said thermal fixation roller and said drive gear has a notch and the other has a projection that can be inserted into the notch.

5 6. A fixation unit according to claim 1, wherein a frictional force engages said thermal fixation roller with said drive gear.

7. A fixation unit according to claim 1, wherein said thermal fixation roller is made of aluminum and has a thickness of 0.8 mm or smaller.

10

8. A fixation unit according to claim 1, wherein said thermal fixation roller is made of aluminum and has a thickness of 0.6 mm or smaller.

9. A fixation unit according to claim 1, wherein said thermal fixation roller  
15 has a hollow cylindrical shape.

10. A fixation unit that fixes toner onto a recording paper, said fixation unit comprising:

a hollow thermal fixation roller that has a thickness of 0.6 mm or  
20 smaller and is made of a metallic material;

a heating part that heats said fixation roller; and

a drive gear, mounted on said thermal fixation roller, which rotationally drives said thermal fixation roller.

25 11. A fixation unit according to claim 10, wherein the metallic material is aluminum.

12. A fixation unit that fixes toner onto a recording paper, said fixation unit comprising:

a thermal fixation roller having a projection;

a heating part that heats said thermal fixation roller;

5 a compressing part that presses said thermal fixation roller; and

a drive gear, mounted on said thermal fixation roller, which rotationally drives said thermal fixation roller and has a notch into which the projection of said thermal fixation roller is inserted.

10 13. A fixation unit according to claim 12, wherein said thermal fixation roller is made of aluminum and has a thickness of 0.8 mm or smaller.

14. A fixation unit according to claim 12, wherein said thermal fixation roller is made of aluminum and has a thickness of 0.6 mm or smaller.

15

15. A fixation unit that fixes toner onto a recording paper, said fixation unit comprising:

a thermal fixation roller having a notch;

a heating part that heats said thermal fixation roller;

20 a compressing part that presses said thermal fixation roller;

a drive gear, mounted on said thermal fixation roller, which rotationally drives said thermal fixation roller and has a projection that is inserted into the notch of said thermal fixation roller is inserted; and

a suspension member, secured onto said thermal fixation roller, which

25 closes the notch and prevents the notch from deforming.

16. A recording apparatus comprising:

a fixation unit that fixes toner onto a recording paper, wherein said fixation unit includes a thermal fixation roller, a heating part that heats said thermal fixation roller, a compressing part that presses said thermal fixation roller, and a drive gear, mounted on said thermal fixation roller, which rotationally drives said thermal fixation roller, wherein an outer diameter of said thermal fixation roller is equal to or larger than an inner diameter of said drive gear, as said heating part heats said thermal fixation roller;

a first mode that uses said fixation unit to record information on the recording paper; and

a second mode that stop heating said fixation unit.

17. A recording apparatus comprising:

a fixation unit that fixes toner onto a recording paper, wherein said fixation unit includes a hollow thermal fixation roller that has a thickness of 0.6 mm or smaller and is made of metallic material, a heating part that heats said fixation roller, and a drive gear, mounted on said thermal fixation roller, which rotationally drives said thermal fixation roller;

a first mode that uses said fixation unit to record information on the recording paper; and

a second mode that stop heating said fixation unit.

18. A recording apparatus comprising:

a fixation unit that fixes toner onto a recording paper, wherein said fixation unit includes a thermal fixation roller having a projection, a heating part that heats said thermal fixation roller, a compressing part that presses said thermal fixation

roller, and a drive gear, mounted on said thermal fixation roller, which rotationally drives said thermal fixation roller and has a notch into which the projection of said thermal fixation roller is inserted.;

- 5       a first mode that uses said fixation unit to record information on the recording paper; and
- a second mode that stop heating said fixation unit.

19.    A recording apparatus comprising:

- 10       a fixation unit that fixes toner onto a recording paper, wherein said fixation unit includes a thermal fixation roller having a notch, a heating part that heats said thermal fixation roller, a compressing part that presses said thermal fixation roller, a drive gear, mounted on said thermal fixation roller, which rotationally drives said thermal fixation roller and has a projection that is inserted into the notch of said thermal fixation roller is inserted, and a suspension member, secured onto said thermal
- 15       fixation roller, which closes the notch and prevents the notch from deforming;
- a first mode that uses said fixation unit to record information on the recording paper; and
- a second mode that stop heating said fixation unit.

- 20       20.    A method for manufacturing a fixation unit that fixes toner onto a recording paper, said method comprising the steps of:

      forming a hollow cylindrical thermal fixation roller that heats and compresses the toner against the recording paper, and has a first thermal expansion coefficient;

forming a drive gear that rotationally drives the thermal fixation roller and has a second thermal expansion coefficient smaller than the first thermal expansion coefficient; and

mounting the drive gear on the thermal fixation roller, wherein said step  
5 of forming the thermal fixation roller and said step of forming the drive gear set an outer diameter of the thermal fixation roller and an inner diameter of the drive gear at the room temperature based on the first and second thermal expansion coefficients so that the outer diameter of said thermal fixation roller is equal to or larger than the inner diameter of said drive gear, when the toner is heated.

10

21. A thermal fixation roller on which a drive gear is mounted, said thermal fixation roller having an outer diameter equal to or larger than an inner diameter of the drive gear at the time of heating.

15

22. A thermal fixation roller according to claim 21, wherein said thermal fixation roller has a hollow cylindrical shape.

23. A thermal fixation roller according to claim 21, wherein said thermal fixation roller is made of a metallic material and has a thickness of 0.6 mm or smaller.

20

24. A thermal fixation roller according to claim 21, wherein the metallic material is aluminum.